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SNOW/ICE MELTING CANTEEN

by

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Final Report

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U. S. ARMY LAND WARFARE LABORATORY

Aberdeen Proving Ground, Maryland 21005

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <p>In March 1970, during a visit by a briefing team from USALWL to Alaska, the USARAL Surgeon General requested that LWL develop a canteen for use under Arctic conditions. Canteens presently used do not protect water from freezing and troops often become dehydrated before they can replenish their water supply.</p> <p>A canteen, designed to be worn between the parka and the woolen OG shirt was developed. The canteen, fabricated from FDA approved silicone rubber,</p>		

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incorporates a sip tube and has a large opening at the top to permit the user to stuff snow into the canteen. The body heat and the sloshing of the water in the canteen causes the snow to melt. This provides the user with a continuous supply of water.

Because of the disestablishment of USALWL, completion of this task by June 1974 was not feasible and the task was terminated. Information derived from the task is being transmitted to Natick Laboratories, MA for such action as may be considered appropriate.

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INTRODUCTION

At the request of US Army Alaska, the US Army Land Warfare Laboratory initiated a task to design and develop a canteen which would provide troops with drinking water in extremely cold temperatures. The problem of dehydration is as critical in a cold environment as in a hot environment. In a cold environment troops do not feel the need for water even though they perspire. The canteen under development is a 2 qt flexible canteen which provides the user with a continuous supply of drinking water. The attached sip tube allows the user to drink while moving. The two-shell concept is lightweight, durable, comfortable to wear and does not interfere with other equipment.

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DESCRIPTION

The basic principle of the snow/ice melting canteen was derived from the seal gut canteen used by the Eskimo to melt snow. This seal gut or tube was filled with snow and worn around the waist next to the skin of the Eskimo. The body heat would melt the snow and provide the Eskimo with a source of drinking water.

The first design was fabricated from an FDA approved silicone material backed by a two oz/yd nylon twill which had a harness molded into the canteen. The straps criss-crossed around the user's back similar to the straps on bib type overalls. Because the canteen was fabricated from silicone rubber layers, the end product was heavy, bulky and unmanageable. The single shell concept did not protect against rupturing or water leakage in the event the user had to fall to the ground. The rupturing or leakage of the canteen in a cold environment, which would result in the user becoming wet, could be fatal.

The second prototype Arctic canteen was fabricated using a two-shell concept. A lightweight FDA approved polyethylene material was fabricated slightly larger than a nylon outer cover. The inner bag was larger than the outer bag so that the outer cover would take the stress and protect the canteen from rupturing should the individual fall to the ground. Although the two-shell concept proved feasible, the inner bag was much too light in weight and during normal handling was easily torn.

The two-shell concept was pursued in the last prototype developed by USALWL which was fabricated from FDA approved silicone rubber, approximately 9" wide x 12" high x 1½" thick. The top of the bag had a wide mouth opening which allowed the user to insert fresh snow into the bag. The opening was sealed by use of a slide type plastic locking device and Velcro, a commercial hook and pile type fabric fastener. The canteen included a sip tube connected to the bottom of the bag. The canteen was designed to be carried in a lightweight outer bag made of nylon, which was to be worn on the individual's chest.

USALWL was in the process of having several canteens fabricated for field testing when disestablishment of the laboratory was announced. The canteen described has never been tested.

CONCLUSION

Based on the Eskimo water tube and the prototypes developed, the snow/ice melting canteen concept appears feasible. Since dehydration is a serious problem for personnel operating in cold environments, a device which provides a continuous source of water would be advantageous. The present canteens do not prevent water from freezing and individuals must wait until they stop to make camp before replenishing their supply of water. It is recommended that this type canteen approach be continued to meet the need expressed by an operational organization.

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